

REMARKS

Reconsideration of the present patent application is respectfully requested.

Although claims 71-108 were pending in this patent application as of this most recent Office Action, claims 71-108 have been canceled by the foregoing amendment and replaced by new claims 109-145.

The December 14, 2007 Office Action relied on some combination of the Mullins, Ludlow, and Heitmann patents for the rejection of claims 71-108. Since a number of claim amendments were contemplated for claims 71-108, including amendments addressing the claim objections due to informalities (i.e., antecedent basis), it was concluded that the easiest and most efficient way to proceed would be to replace claims 71-108 with a new set of claims. New claims 109-145 are based in part on what was recited in claims 71-108, though with rephrasing and rewording in view of the three prior art patents relied upon by the Examiner. Accordingly, it makes sense to discuss each of these three prior art patents in terms of the new claims as an aid to the Examiner. This detailed explanation will hopefully facilitate an indication of allowability.

Mullins discloses an arrangement in which various parameters relating to the length of a cigarette are determined. Mullins does not disclose a processor which determines one or more physical properties of a smoking article or filter rod which relate to the diameter. Mullins also does not disclose any of the following features:

1. a rotating mechanism which rotates a smoking article or filter rod about is axis;

2. a processor which repeatedly samples an image as a smoking article or filter rod is rotated;
3. a processor which processes each image sample to obtain a measurement of the diameter of a smoking article or filter rod in each image sample; and
4. a processor which uses such measurements to obtain mean diameter, ovality, circumference, roundness, or shape of a smoking article or filter rod.

The Examiner has stated that a rotating mechanism is disclosed by the Ludlow reference. However, the rotating mechanism of Ludlow is completely different from that of the present invention. Ludlow discloses two image capture devices that are used to capture images of opposite sides of a cigarette (see Column 4, lines 28-32). A cigarette is initially held in a first rotational drum 10 by means of a vacuum. Once an image of a first side of a cigarette has been captured by a first image capture device 14, the drum is rotated through 90 degrees, and the cigarette is transferred to a second rotational drum 20. At this point the cigarette is held in the second drum 20 by means of a vacuum. The second drum then rotates through 90 degrees which brings the other side of the cigarette into view of the second image capture device 24 (see Column 4, lines 32-53 and FIG. 1). Thus, in Ludlow, the two drums 10, 20, rotate about their axes. The cigarette is held on successive drums by a vacuum and does not itself rotate about its axis.

By contrast, according to new claim 109, there is a rotating mechanism which rotates the smoking article about its axis in the field of view of the imaging device, and a

processor which repeatedly samples the image as the smoking article is rotated by the rotating mechanism.

If one of ordinary skill in the art had provided a rotating mechanism, as taught by Ludlow and the method of Mullins, he would have arrived at a method in which the cigarette was transferred between two imaging devices by means of two drums, as shown in FIG. 1 of Ludlow. He would not have arrived at the subject matter of claim 109.

At the time of the present invention, vacuum drums for holding cigarettes, as shown in the Ludlow reference, were common in the industry, but a free running cigarette turned by parallel rollers on its own axis was not. The present inventors have realized that such an arrangement can be used to allow various parameters relating to the diameter of the cigarette to be obtained. Such an arrangement was not known in the prior art, and nor would it have been obvious. Indeed, the prior art teaches that a cigarette should be held firmly by a vacuum, as shown by Ludlow, and not allowed to rotate freely on its own axis. Accordingly, the prior art actually teaches away from the present invention.

With regard to new claim 113, the Examiner is advised that Heitmann discloses a photoelectric transducer 14 which detects the amount of light which is reflected by a cigarette. The light originates from two light emitting devices 11, 12. Heitmann does not disclose side lights for illuminating the field of view of an imaging device.

With regard to new claim 139, contrary to the assertion of the Examiner in paragraph 27 of the Office Action, Heitman does not disclose determining the diameter of a smoking article or filter rod. There is no teaching in the prior art which suggests determining the diameter of a rolled smoking article or filter rod using the method of Mullins. The dependent claims contain features which are not disclosed in the prior art

and thus these claims are believed to be patentable on their own merit, as well as due to their dependency from an allowable independent claim.

Accordingly, the Examiner is respectfully requested to indicate the allowability of new claims 109-145.

Respectfully submitted,

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